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ABSTRACT

There is increasing interest in integrated studies or the integrated curriculum at all levels of schooling. Integrated approaches reveal wide differences in interpretation of what integration actually means and how it can be accomplished within the school setting. Chapter 1 discusses the various meanings of integration and some approaches taken to achieve integration. Then chapter 2 addresses why there is a call for integration at all levels of schooling. Chapter 3 briefly describes nine integrative models. Chapter 4 describes the first draft of the elementary "Education 2000 Integrated Curriculum" in Eugene (Oregon) Public Schools. Chapter 5 contrasts integrated and traditional subject-centered curricula. In conclusion, the arguments in support of integrative education are summarized. (57 references) (SI)

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INTEGRATIVE EDUCATION

A Curriculum for the Twenty-First Century

Betty Jean Eklund Shoemaker

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Preface

What kind of curriculum and instructional strategies will be needed in the twenty-first century? Critics of today's curriculum contend it is fragmented by the multiplicity of demands on schools. Every societal problem, from racism to drugs to HIV, quickly becomes the basis for a new mandate added to an already overcrowded curriculum.

An even deeper source of the fragmentation, critics point out, is that the traditional academic disciplines are taught as separate elements. When students master each piece of the curriculum in isolation from the others, they are not likely to see how the pieces connect. As Wiles Bondi (1988) says, "There are ideas worth learning which are not unique to one discipline and are greater than the sum of the individual disciplines involved."

Responding to this perceived problem, educators and curriculum theorists are showing renewed interest in interdisciplinary, holistic, and integrative approaches. In this OSSC Bulletin, Betty Shoemaker defines *integrative education* to mean "education that is organized in such a way that it cuts across subject-matter lines, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study. It views learning and teaching in a holistic way and reflects the real world, which is interactive."

In addition to presenting the rationale for and examples of integrative education, Shoemaker points out the integrative approach's compatibility with modern research findings on the human brain and the learning process.

Betty Shoemaker teaches third grade at Eugene's Bailey Hill Elementary School. From 1985 to spring 1989 she was a teacher on special assignment for integrated studies in the Eugene Public Schools. In that role she developed integrated units and trained elementary teachers in how to use them. She was also the facilitator for the writing committee that developed the district's *Education 2000 Integrated Curriculum*.

Shoemaker completed her master's degree at the University of Oregon in 1970 and is currently working on her doctorate in the Division of Teacher Education on integrative curriculum.

Philip K. Piele
Executive Secretary

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Introduction

Curricularists have for many years argued about the way in which curricula should be organized. Claims have been made for subject-centered, problem-centered, and pupil-centered designs of instruction among others. In addition, the content of the curriculum is increasingly the focus of debate. The emergence of peace studies, multicultural education, computer studies, substance abuse programs, and the like have raised questions about the justification for the inclusion or exclusion of certain subjects within the curriculum. Those involved in these areas often comment that they are working hard to gain acceptance as a "discipline."

There is increasing interest in integrated studies or the integrated curriculum at all levels of schooling. Various national reports are calling for an "integrated" day, an "integrated" curriculum, and the "integration" of a variety of materials or strategies into the school program. On closer examination, these integrated approaches reveal wide differences in interpretation of what integration actually means and how it can be accomplished within the school setting. Despite this diversity, the approaches appear to have one thing in common. They are concerned about the fragmentation of the current curriculum and the compartmentalization of knowledge with its accompanying specialization and frequent irrelevance to real-world problems.

In this Bulletin, I first discuss the various meanings of integration and some approaches taken to achieve integration. Then chapter 2 addresses why there is a call for integration at all levels of schooling. Chapter 3 briefly describes nine integrative models. Chapter 4 describes the first draft of the elementary *Education 2000 Integrated Curriculum* in Eugene (Oregon) Public Schools. Chapter 5 contrasts integrated and traditional subject-centered curricula. In conclusion, I summarize the arguments in support of integrative education.

Chapter 1

What Is Integrative Education?

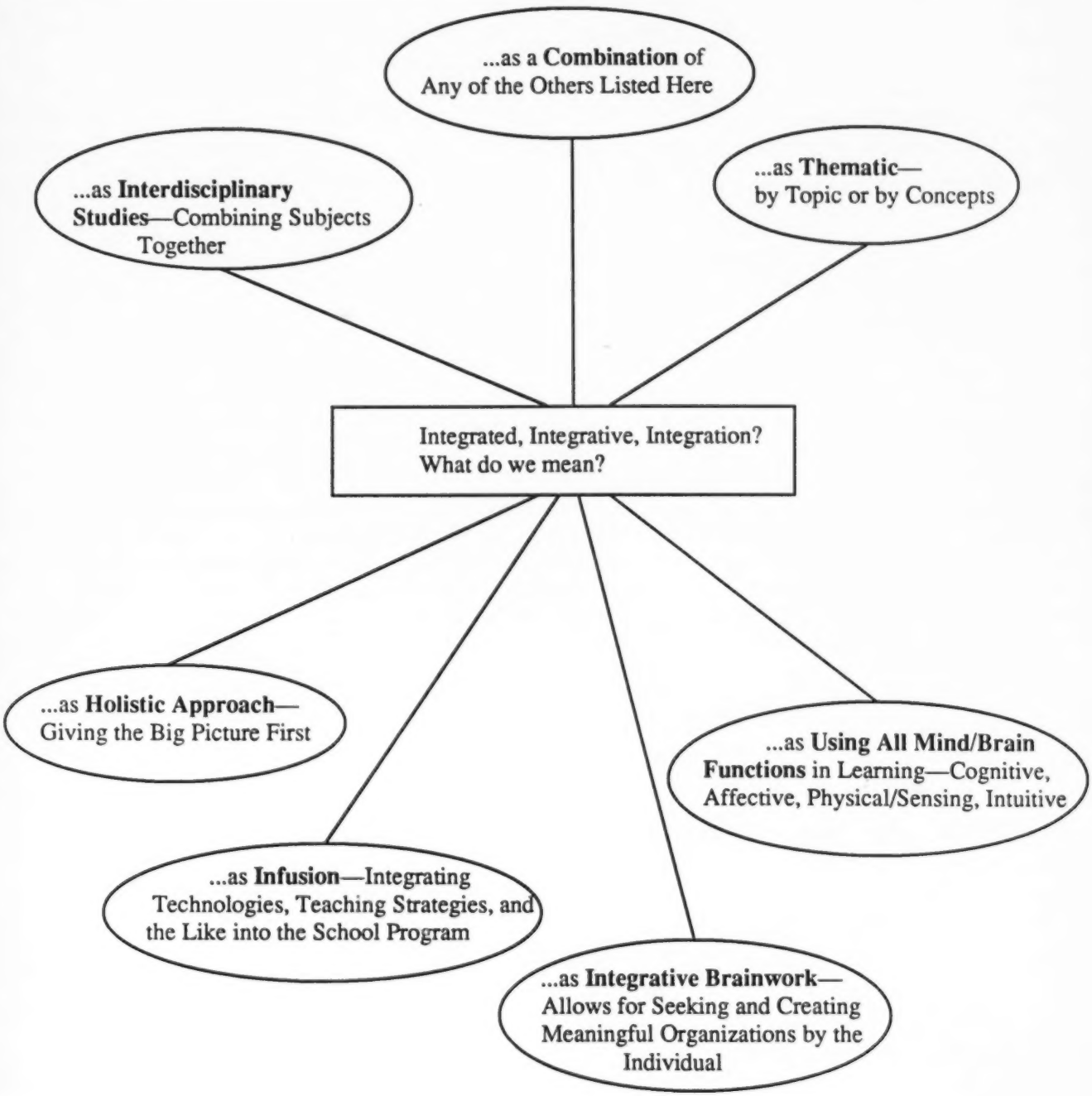
In 1988 the National Association for the Education of Young Children released a position statement on developmentally appropriate practices for the primary grades that called for integrated learning and development. Donald Bragaw and H. Michael Hartoonian in the Association for Supervision and Curriculum Development 1988 Yearbook, *The Content of the Curriculum*, call for an integrated year in social studies in grades 3 and 6. In describing twenty excellent science programs, John Pennick and Roger Johnson (1983) stated that all the programs integrated current affairs and societal issues into the curriculum. Ernest L. Boyer, president of the Carnegie Foundation for the Advancement of Teaching, states that "seeing the connectedness of things" is the goal of common learning. Harlan Cleveland (1986) calls for schools to prepare students who have skills in integrated decision-making. Barbara Clark (1986) has developed an integrative education model based on the latest research on the brain.

All the above statements reflect different uses of the words *integrated* and *integrative*. Figure 1 displays a summary of some common interpretations.

A Survey of Definitions

Dale M. Hamilton (1982) uses the definition from Good's *Dictionary of Education* in his dissertation, "A Study of the Characteristics of Integrated Programs Found in a Sample of Selected Schools." Good (1973) defines *integrated curriculum* as "a curriculum organization which cuts across subject-matter lines to focus upon comprehensive life problems or broad areas of study that bring together the various segments of the curriculum into meaningful association." This definition equates integration with "interdisciplinary."

Figure 1
Various Approaches to Integration


...as a **Combination** of Any of the Others Listed Here
...as **Interdisciplinary Studies**—Combining Subjects Together
...as **Thematic**—by Topic or by Concepts
Integrated, Integrative, Integration? What do we mean?
...as **Holistic Approach**—Giving the Big Picture First
...as **Using All Mind/Brain Functions** in Learning—Cognitive, Affective, Physical/Sensing, Intuitive
...as **Infusion**—Integrating Technologies, Teaching Strategies, and the Like into the School Program
...as **Integrative Brainwork**—Allows for Seeking and Creating Meaningful Organizations by the Individual

Edison Ellsworth Oberholtzer (1937), in his doctoral dissertation "An Integrated Curriculum in Practice," uses the term *integrated curriculum* to mean a thematic curriculum. It is "a type of curriculum organized and constructed about central themes or 'big ideas' so selected as to obtain certain desired outcomes. The term integrated is used to distinguish this curriculum from the type which is set up in divisions by subjects."

The National Society for the Study of Education in 1958 published its yearbook titled *The Integration of Educational Experiences* (Henry 1958). In chapter I of the yearbook, Paul Dressel makes clear his distinction between integrated and integrating (or integrative experiences):

> Educational experiences may be planned with the hope that the basis for organization (integration) will be grasped by the students; or educational experiences may be planned so that each individual is encouraged to make his own organization. In the first case an integrated experience is provided. If grasped, this serves a double purpose: it acquaints the individual with meaningful integrations achieved by others, and it provides him with a model that may become the take-off point for achievement of his own integration. In the second case, an integrating experience is provided. If successful, this also serves a double purpose: it provides the individual with his own integration of the immediate experiences, and it develops in the individual some ability and satisfaction in seeking for meaningful organizations and relations of his later experiences.
>
> The first approach—fully integrated experiences carried to the extreme —could lead to docile acceptance of authority and to inflexibility in the face of changing situations. This first approach, though useful, must, therefore, be tempered by the second—integrating experiences—for these hold the possibility of developing even greater insight into and respect for the integrations made by great minds of the past. Integrating experiences also hold some promise of developing a flexible individual who is self-reliant in adjusting to new conditions. Hereafter integrated and integrating (integrative) are purposefully used to imply this distinction. In the one case, the integration is done for you. In the other, you do it yourself.

Dressel uses the words here to mean what I have come to call *integrative brainwork,* that is, allowing for seeking and creating meaningful organizations by the individual (either the teacher or student).

W. B. Ragan (1966) uses a definition that reflects a holistic perspective. He states that *integrated* curriculum is a misuse of terms since it is persons who are to be integrated and not school subjects. He suggests the use of the word *integrative* curriculum since it implies "that the end sought is the integration of the individual both within himself and with his environment."

Barbara Clark (1986) calls her model "The Integrative Education Model." "In every subject area, The Integrative Education Model combines

thinking with feeling, the senses, and intuition. Through this model each function of the brain is allowed to support the others, resulting in a very coherent, powerful learning experience." This approach I have labeled "Using All Mind/Brain Functions."

In addition, there are numerous references in the literature to the integration of technologies, teaching strategies, or the like into school programs. This usage is generally synonymous with *infusion*. We will not pursue this perspective in this paper.

Working from these definitions I prefer one that is eclectic, representing the concepts of "thematic," "interdisciplinary," "holistic," "whole brain function," and "integrative brainwork." It adopts the term *integrative* and is representative of the larger school setting as well as the curriculum. *Integrative education* is education that is organized in such a way that it cuts across subject-matter lines, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study. It views learning and teaching in a holistic way and reflects the real world, which is interactive. This interactive nature involves the learner's physical body, thoughts, feelings, senses, and intuition. Holistic teaching and learning provide learning experiences that are related in such a way that they unify knowledge and provide a greater understanding than that which could be obtained by examining the parts separately.

Now, let's take a closer look at some of these approaches.

Interdisciplinary Approaches

One of the most common approaches to integration is the interdisciplinary approach. This approach is used in both elementary and secondary schools but is predominant in middle and senior high programs. Interdisciplinary approaches align contents and concepts from one subject discipline with contents/concepts of another, at the same time maintaining the clear boundaries between disciplines. Wiles Bondi (1988) describes interdisciplinary models as taking one or more of five directions: (1) identifying a theme and its related concepts from each discipline and teaching them at the same time; (2) having each discipline teach a topic at one time; (3) two or more disciplines sharing an activity or project; (4) each discipline emphasizing certain skills common to itself and others; and (5) some concepts common to two or more disciplines receiving simultaneous treatment.

He identifies several assumptions about interdisciplinary instruction at the middle school level:

1. There are ideas worth learning which are not unique to one discipline and are greater than the sum of the individual disciplines involved.
2. Students at this age are uniquely sensitive to and need these ideas to stimulate their interest in learning.

3. The "real" world is a world of issues, topics, problems and situations—not disciplines, subjects or courses.
4. Students at this age respond favorably to active, small groups combined with independent learning situations.
5. The essential skills and concepts of all disciplines can be effectively learned during the study of interdisciplinary topics.
6. Students of this age benefit most from having a team of teachers who have a common approach to content, instructional strategies and operational procedures.
7. For many middle school students, preventing their "turn off" to school and learning is the highest priority of the school.

Bondi maintains that a middle school curriculum composed of interdisciplinary topics centered around themes and emphasizing projects and problem-solving characterizes a successful, desirable program.

Examples of interdisciplinary approaches include (1) the coordination of senior high social studies and English classes in such a way that major historical events are reinforced through literature and writing assignments; (2) combining basic science and home economics in a food sciences class; and (3) at the elementary level, starting with a social studies unit and bringing in language arts, music, and visual and performing arts.

Thematic Approaches

Interdisciplinary approaches may involve the use of themes or topics, but do so while maintaining subject discipline boundaries. In the thematic approach, subjects or courses are subordinated to some relational theme or supra-idea in which the boundaries between subjects become blurred.

Theme studies in classrooms tend to be one of two kinds: those related to topics or those related to concepts. I distinguish the two in this way. Using a topic as a theme provides a narrow area of study for a short period. Using a concept as a theme allows for a broad area of study in which many topics can be explored. Ruth Gamberg, Winniefred Kwak, Meredith Hutchings, Judy Altheim with Gail Edwards (1988) contrast what I call the *topic* approach with the *concept* approach:

> One teacher recently told us about the theme study she did with her second graders on the subject of Valentine's Day. The children read a story about it, had a discussion, learned a relevant song, wrote and illustrated poems and short stories on their experiences and feelings about Valentine's Day, pasted their math work on bright red valentines, and finally displayed their work for each other to admire. Viewed from this very limited perspective, this indeed, is a kind of theme study—the focus was on a topic of interest. . . [On the other hand, concept] theme study refers to the core of what children do in school. It is the core in that it defines what is to be the center of

> attention, incorporates many traditional subject areas within it, and develops over a long period of time....It involves in-depth study.... For a theme to qualify as deserving of study, it must fulfill several criteria: it must be of interest to the children; it must be broad enough so that it can be divided into smaller subtopics also of interest to the children; the relationship of the subtopics to the wider context must remain clear; and the topic [concept] should not be geographically or historically limiting.

They go on to share the importance of the concept theme lending itself to (1) comparing and contrasting ideas; (2) breaking down subject discipline lines; and (3) breaking down the walls between school and society so that students can be actively engaged in the real world.

Sandra Kaplan (1986), describing her differentiated curriculum model for the gifted/talented, identifies several principles on which the curriculum is based. Among others, those principles include presenting content that is related to broad-based issues, themes, or problems; integrating multiple disciplines into the area of study; and presenting comprehensive, related, and mutually reinforcing experiences within an area of study.

She states that the use of topics as organizers has resulted in stifling learning possibilities for students. She argues instead for the use of conceptual themes as a basis for organizing the curriculum. Using these themes as organizers allows for the development of curricula that widen the options for teaching and learning. Themes provide a construct under which topics can be subsumed. Selecting the conceptual theme "extinction" as opposed to the topic of "dinosaurs" is an example.

According to Kaplan, "The selection of themes should be based on a number of factors: (a) The theme should be related to and/or rooted in a discipline; (b) the theme should be significant to study; (c) the theme should not be age or time dependent; and (d) the theme should allow for a variety of teacher-directed and student-selected options for study." Kaplan states that the selection of themes can come from many sources, including student interests, regular curricula, scholars, diagnostic data, and teacher interests and perceptions.

The above references reflect several common points. Concepts can serve as integrating threads. Concepts/conceptual themes are different than topics in that they encompass a broad range of content and extend over a wide range of subject matter. Concepts selected for study should be significant and dynamic and should add meaning to one's understanding. Concepts selected should not be unrealistically abstract for children to perceive and comprehend.

Holistic Approaches

Holism has its roots in perennial philosophy, which holds that all

things are part of an indivisible whole. It is visible in the works of nineteenth century transcendentalists including Ralph Waldo Emerson and Henry David Thoreau. Humanistic psychologists such as Abraham Maslow and Carl Rogers with their focus on self-actualization and personal growth provide support for the holistic position. Holism in education has taken many forms including the work of A. S. Neill at Summerhill, the open-education movement, the social change movement, and Waldorf education. The goals of the holistic movement are generally self-actualization and social involvement.

Holistic approaches represent two perspectives. First, learning focuses on the whole child—the integration of her cognitive, physical, affective, and spiritual dimensions. Teachers help students understand the interrelatedness and interdependence of phenomena.

Holism also focuses on providing a curriculum that shares the "big picture" with students first. Edward Clark (1988) uses the puzzle as a metaphor for holistic education:

> Getting an education is like putting together an ever-expanding jigsaw puzzle. Students spend years memorizing the shapes, colors and sizes of as many pieces as possible. They learn to collect and sort the pieces into appropriate piles, each of which has a label—math, science, history, art. Occasionally they may fit a few pieces together. However, because they seldom receive more than a few hints as to what the puzzle is all about, they have no frame of reference for understanding how the individual pieces fit together. . . . What is ignored in this perspective is that *it is the picture of the puzzle that helps one make sense of the pieces.* Apart from the context provided by the picture, there is nothing intrinsically valuable about any single piece of a jigsaw puzzle by itself.

Using All Mind/Brain Functions

Barbara Clark (1986) uses the word *integrative* to mean the integration of all brain/mind functions in learning. She summarizes data from research in fields such as psychology, child development, sociology, linguistics, neurobiology, and physics to develop a more efficient learning model for the classroom. One of the most obvious conclusions from the data being collected is the need for an integrative use of brain functions.

It is clear that each function is intricately *inter*dependent on each other function; any methodology that focuses only a part of the brain process on the learning task is inefficient at best and, at worst, wasteful of human talent and ability. The vast resources of the brain/mind complex are best developed when opportunities are made available for that interdependence.

Clark identifies four brain functions: the thinking function, the feeling or emotional function, the physical/sensing function, and the intuitive function. The thinking function includes the analytic, problem-solving, sequen-

tial, evaluative specialization of the left cortical hemisphere of the brain along with the more spatially oriented, gestalt specialization of the right cortical hemisphere. The feeling or emotional function (primarily regulated from the limbic area of the brain) expresses itself in emotions and affects every part of the brain/mind system. The physical/sensing function involves the senses of hearing, sight, taste, touch, and smell, as well as movement and physical encoding. The intuitive function involves insight (total understanding and synthesis) and creativity. Clark's Integrative Education Model is described more fully in chapter 3.

Integrative Brainwork

Seeking and creating meaningful organizations within the individual is the integrative approach I call "integrative brainwork." Many theorists believe that creating meaningful organizations can be facilitated through concept learning. Therefore many studies have been done and models have been developed to enhance the teaching of concepts. In chapter 3, I review four approaches to the development of concepts, including David Ausubel's Advance Organizer Model, Jerome Bruner's Concept Attainment, Hilda Taba's Inductive Thinking Model, and Jean Piaget's Theory of Cognitive Development. For further discussion of these information processing models for use in the development of concepts, refer to the work of Bruce Joyce and Marsha Weil (1980).

Summary

This chapter has reviewed several definitions of and approaches to integration. Some approaches are interdisciplinary or thematic in nature. Interdisciplinary approaches maintain traditional subject discipline boundaries, whereas thematic approaches blur those boundaries. Thematic approaches center around narrower focused topics or around indepth studies of larger, broader concepts. Some authors use the term *integrative* to mean teaching and learning that is holistic. Others mean using one's whole mind/brain function in learning or structuring the learning environment in such a way as to facilitate the development of meaningful organizations within the individual. Specific integrative models described in chapter 3 reflect one or more of these approaches.

Chapter 2

Why Integrative Education?

Advocates of integrative education contend that integrative programs address three important issues in schools today. The first issue relates to the fragmentation and overcrowding of existing curricula. The second issue surrounds the understanding and application within school settings of research studies on the human brain and the process of learning. The third issue relates to the educational reform movement and particularly to the role of educators in preparing citizens for life in the twenty-first century. Let us examine each of these issues.

The Overcrowded and Fragmented Curriculum

Marlowe Berg (1988) and John McNeil (1988) point out that curriculum reform efforts in the 1960s and 70s brought about many new or expanded curriculum programs, which led to fragmentation. A strong federal presence in curriculum has existed since the launching of Sputnik I in 1957. With the passage of the National Defense Education Act in 1958, the United States government moved aggressively to strengthen school programs. Since that time the federal government has sought to create equity within educational systems through various acts (P.L. 94-142 and Title 9, among others) and to strengthen America's ability to compete in world markets. These efforts led to a plethora of federally initiated or funded programs that extended the scope of the curriculum (career education, multicultural education, Chapter 1, Hepatitis B/HIV curriculum) and contributed to its overcrowding and fragmentation.

Classroom teachers and administrators nationwide are complaining that there is too much to teach and too little time in which to do it. Allan Vann (1988) states, "The elementary school curriculum cup runneth over, and no one at the state level appears to recognize either the magnitude of the runoff or the disillusionment of those who must mop up the spillover." He uses the example of his state's health curriculum, to which have been added personal safety, drug and alcohol abuse, and HIV curriculums. This phe-

nomenon is also present at the secondary level where the increase of knowledge within subject disciplines is occurring at an exponential rate.

In summary, curriculum reform efforts, particularly the increased involvement of governments, both state and federal, has led to the fragmentation and overcrowding of the current curriculum.

The Human Brain and Learning

G. Caine and R. Caine (Crowell 1989) have reviewed the research that has been done on the human brain and synthesized the following principles that have implications for learning theory in the classroom:

- Although we may focus on one thing at a time, the brain processes and organizes many things at the same time.
- Learning is a physiological experience and much more than just a mental exercise.
- The brain organizes new knowledge on the basis of previous experience and meaning.
- Patterns of experience help determine the significance of content.
- The relationship between one's emotional state and learning is critical.
- The brain processes parts and wholes simultaneously.
- Peripheral stimuli are processed by the brain both consciously and unconsciously.
- We have a spatial memory system that retrieves experience quickly and easily. Spatial memory allows us to recall holistic images. Take, for example, last night's dinner. Although we made no attempt to memorize the particular foods, our memory of the experience is intact and perhaps rather detailed.
- Facts and skills that are not embedded in spatial memory need more practice and rehearsal.
- The brain responds to challenges but is less effective when threatened.

Leslie Hart (1983) states that the findings related to the brain have direct implication for schools and the organization of the curriculum, including the following principles that I have summarized from Hart's book:

1. The curriculum should avoid fragmentation and instead emphasize patterns to unify knowledge and to promote transfer of learning. This can be done through the use of pattern-concepts [which he also calls "grand ideas"] that apply to a wide variety of applications.
2. "The ambience should be dominantly nonthreatening and

nonpunitive, and it should reduce all aspects of captivity to the minimum achievable."

3. "Much of the learning and application of so-called basic skills should be in relation to real events (not contrived), and a large proportion should involve the outside world."
4. Because input is the key to acquiring knowledge, "students should be exposed to, but should largely self-select, perhaps ten times as much input as ordinarily characterizes the conventional graded classroom."
5. A smorgasbord principle should apply. It permits broad recognition of and allowance for individual differences, and accommodates a wide range of learning styles.
6. "The employment of spoken and written language for actual communication purposes (in contrast to exercises) can be stepped up 500 to 1000 percent."
7. "Young children especially must *manipulate* what they deal with. Manipulation remains helpful, if less essential, at later ages."
8. "Feedback from reality, rather than from authority, can be greatly enhanced by making available activities with this built-in characteristic."
9. "Students' work should not be interrupted by changing periods, but rather take precedence over the clock."

Frank Smith (1986) summarizes the implications for schools in his "Learners' Manifesto":

1. *The brain is always learning.* We learn exactly what is demonstrated by people around us. Schools must stop trying to teach through pointless drills, activities, and tests.
2. *Learning does not require coercion or irrelevant reward.* We fail to learn only if we are bored, or confused, or if we have been persuaded that learning will be difficult. Schools must be places where learning can take place naturally.
3. *Learning must be meaningful.* If we understand, then we learn. Schools must change themselves, not try to change us, to ensure we understand what we are expected to learn.
4. *Learning is incidental.* We learn while doing things that we find useful and interesting. Schools must stop creating environments where we cannot engage in sensible activities.
5. *Learning is collaborative.* We learn by apprenticing ourselves to people who practice what they teach. Schools must stop trying to deliver instruction mechanically. If teachers cannot teach, there must be better teachers, not more tests and programmatic instruction.
6. *The consequences of worthwhile learning are obvious.* We

demonstrate the worthwhile things we learn by engaging in those activities. Schools, teachers, and parents should not have to rely on marks, scores, or tests to discover if we have learned.

7. *Learning always involves feelings.* We remember how we feel when we learn and when we fail to learn. Schools must not treat learners like battery hens or machines.
8. *Learning must be free of risk.* If we are threatened by learning, then the learning will always threaten. Schools must recognize that continual testing is intellectual harassment.

In summary, the human brain actively seeks patterns and searches for meaning through these patterns. Learning should involve the opportunity to explore these pattern concepts.

Meaning more readily comes when new learning relates to past experience. Schools should involve students in real-world experiences instead of contrived exercises.

The brain processes and organizes many things—both parts and wholes—at the same time. Students should be exposed to much more input than the traditional classroom provides.

The brain functions ineffectively when under stress. Therefore the ambience in the classroom should be warm and nurturing.

Learning is a collaborative endeavor. Schools should shift from competitive models to models in which students and teachers work together in cooperative environments.

Life in the Twenty-First Century

What does the future hold for citizens in the twenty-first century? In a review of futures literature, Steve Benjamin (1989) identified ten important societal, family, and demographic trends that will have impact on public schooling in the future. I have summarized them here.

Societal Trends

- National and global interdependence, focusing on multiethnic and multicultural interdependence as well as the interconnectedness of complex systems, either person-made or natural-made.
- Increasing change both in pace and complexity with technology as the predominant factor causing change.
- Short half-life of knowledge in which knowledge itself undergoes rapid restructuring.

Economic Trends

- The shift from an industrial-based economy to an information- and service-based economy.

- The high-tech influence on an economy in which "microbioelectronics" (biogenetics, physics, robotics, telecommunications, microelectronics, and the like) rule.
- The need to shift jobs frequently as the economy experiences upheavals related to technological advances.

Family Structure Trends

- Women in the workplace with women entering the work force at a faster rate than any other group.
- The increase in single-parent families, primarily through divorce.

Demographic Trends

- Graying population with projections that the over 65 age group will rise from its current 12 percent to an estimated 17 percent by the year 2000.
- Growth in minority populations with the greatest growth among Hispanics.

The futurists that Benjamin examined made several recommendations for educational change in light of the above-mentioned demographics. He shares fourteen of these themes that I have summarized here in order of their frequency within the literature.

Active Learning

Active learning is viewed in two ways. First, students should be actively engaged in the learning process instead of sitting passively while the teacher lectures. Second, active learning involves giving students more autonomy and choice within the learning environment. Teachers and students work collaboratively where the responsibility for learning shifts from the teacher to the learner.

Higher Cognitive Skills

"Generally, futurists suggest that because of the nature of future society. . . students and citizens must be able to think critically, uncover bias and propaganda, reason, question, inquire, use the scientific process, remain intellectually flexible, think about complex systems, think holistically, think abstractly, be creative and view and read critically."

Service Learning

Service-related experiences engage students in active learning and encourage them to deal with real-world problems. These experiences include voluntary service and internships in local institutions and are coupled with inschool analysis and discussion.

Past-Present-Future Focus

Futurists suggest that schools move away from "past oriented curriculums" to more balanced "past-present-future oriented curriculums," helping students to understand that we can construct our future by the choices that we make today.

Lifelong Learning

Because of the nature of rapidly changing societies, education can no longer be seen as a pursuit for one's early years, but must be seen as a process that occurs throughout one's life. Schooling in the twenty-first century will need to occur in both formal and informal settings and will need to be progressively broader and more diversified.

Whole Person Education

Futurists encourage schools to move away from the notion of working only with the cognitive aspects of students and consider helping them develop an entire range of capacities involving body, mind, feelings, spirit, and imagination.

Coping with Diversity

Not only will persons living in the twenty-first century have greater opportunity for contact with diverse peoples through travel and communication, but our society will reflect greater cultural and ethnic diversity. Citizens will need to be skilled in dealing with these issues of change, diversity, and global interdependence.

General Education

A general education is thought to be more serviceable over a longer period of time than that of a specialized education. These generalized processes and knowledge allows for a broader vision and flexibility when dealing with complex problems and life.

Transdisciplinary Education

Futurists are calling for a curriculum that is activity- and idea-based as opposed to a curriculum that is fragmented into subject-based disciplines. The complexity of today's problems requires us to draw from many fields in identifying solutions. Effective solvers of complex problems must be able to generalize and identify the interrelatedness of factors involved. The new curriculum should be centered around core ideas, be thematic, integrate many disciplines, and reflect different levels of complexity.

Personalized Learning

Futurists are calling for personalized learning that reflects and cher-

ishes the differences that exist between peoples. These differences are a major source of creativity. Students should not be treated as if they are all alike for administrative expediency.

Process Approach

Because knowledge is changing and expanding so rapidly, emphasis is placed on learning how to learn as opposed to learning rote facts. This shift from the acquisition of content knowledge to one of process enables students to become producers of knowledge and not just passive consumers.

Education for Communication

Having the ability to work with others in complex, democratic environments requires having strong personal communication skills. In addition, survival skills in the twenty-first century need to include the ability to speak other languages.

Early Childhood Education

Futurists are calling for a reallocation of scarce educational resources from the higher levels (universities and colleges) to meet the needs of young children for two main reasons: The early years are seen as an important base for later learning, and the changing family structure (in which parents are working) calls for institutions to provide care and nurturing for the very young.

Small Structure

The large size of schools is seen not as an economic cost benefit but as a problem. Schools should not be modeled after vast impersonal factories but should be modeled after the family where caring, knowledgeable adults guide and instruct young people in smaller, personalized, instructional settings.

In summary, futurists hold that life in the twenty-first century will involve increasing change and complexity. Restructuring will occur throughout society. There will be more single-parent families and more women in the work force. The economy will be information- and serivce-based and require frequent shifts in jobs. Interdependence at the national and global level will become more significant and will reflect complex natural and person-made systems. There will be growth in both graying and minority populations.

Schools will need to reflect these trends through emphases on higher cognitive skills, communication skills, and flexible, lifelong learning habits. Futurists are calling for students to receive a personalized general education that involves active learning and that occurs within small caring instructional settings.

Summary

Many see integrative approaches as effective ways of addressing issues related to the overcrowding and fragmentation of current educational curricula. Integrative programs have the potential for providing a more effective approach to instruction—one that reflects a broad understanding of the human brain and how learning occurs. Integrative approaches facilitate the implementation of educational practices that will more adequately prepare students for life in the twenty-first century. The Carnegie Forum report (1986) stated:

> We are challenged to produce citizens who are able to intuit, create and solve problems in new ways in order to provide new products and new services in a highly competitive world market. They must be able to work with other people in complex environments. They must be able to adapt to new learning situations; in short, they must know how to learn.

Chapter 3

Models of Integrative Education

This chapter briefly describes nine models of integrative education that I have categorized under the five approaches described in chapter 1. The information processing/concept development models are general teaching strategies that assist in developing concepts within the individual. The other models are broader in scope, encompassing such matters as curriculum content, classroom environment, and teacher and student roles. Table 1 lists these models and relates them to the approaches. The chapter concludes with a summary of the models' common characteristics.

Table 1
Integrative Models as They Relate to Approaches

Approach	*Model*
Using All Mind/Brain Functions	Clark's Integrative Education Model
Thematic	Kovalik's Integrated, Thematic Instruction
Interdisciplinary	Bondi's Designing Interdisciplinary Units
Information Processing/ Concept Development (Integrative Brainwork)	Ausubel's Advance Organizer Model Bruner's Concept Attainment Model Taba's Inductive Thinking Piaget's Studies of Cognitive Development
Combination of Approaches	Kline's Principles of Integrative Learning Shoemaker, Charkoudian, Shirk & Belcher's Laurel Hill Integrative Model

Using All Mind/Brain Functions: Clark's Integrative Education Model

Barbara Clark developed the Integrative Education Model (IEM) as an interactive system that combines the student's four mind/brain functions of thinking, feeling, senses, and intuition. This integration is accomplished through the use of seven key components within the classroom:

1. *Responsive Learning Environment*

   Concerns must be addressed for both the social-emotional and physical environment. The environment must be highly structured and present complex learning tasks. Students, parents, and teachers are seen as a team. The classroom looks more like a laboratory, rich in materials. The ambience must be productive and supportive.

2. *Relaxation and Tension Reduction*

   The environment must reflect relaxation and tension reduction. The teacher must instruct students in strategies to reduce tension. The teacher's behavior and language must be stimulating yet calming.

3. *Movement and Physical Encoding*

   Movement and physical encoding support learning. Students should be encouraged to use movement and their senses fully in learning experiences.

4. *Empowering Language and Behavior*

   Strategies for developing interpersonal and intrapersonal communication must be taught. The teacher must use language and behavior that reflect support, caring, and competence.

5. *Choice and Perceived Control*

   There must be opportunities for student choices within the classroom. The teacher should actively encourage decision-making, alternative views and self-evaluation.

6. *Complex and Challenging Cognitive Activities*

   Students should be allowed to use both rational-linear and spatial-gestalt processing. Lessons should reflect complexity, variety, and challenge.

7. *Intuition and Integration*

   Multisensory, multidisciplinary, and integrated lessons must be taught. Students should be encouraged to use fantasy, imagery, and visualization in learning. Creativity should be encouraged.

Clark states that students who are taught using IEM are found to be more relaxed with themselves and others, more caring and respectful with others, more creative (often involved in higher-level cognitive activities),

more excited about learning (actively initiating opportunities to learn), and more independent and responsible.

Thematic Approach: Kovalik's Integrated Thematic Instruction

Susan Kovalik (1989) describes her Integrated Thematic Instruction as a coming together of three areas: how students learn, instructional strategies, and curriculum development. When discussing how children learn, she draws from Hart's (1983) Proster Theory in identifying five elements of brain-compatibility. These five elements should be present in every classroom. They are trust, meaningful content, choices, adequate time, and enriched environment.

1. *Trust*

   Within the classroom students should be able to count on daily activities that include thinking and problem-solving in a respectful and caring environment. This includes the absence of threat from teachers and peers.

2. *Meaningful Content*

   The brain is naturally seeking patterns and can handle vast amounts of input. Solving real problems within meaningful contexts is a key to learning.

3. *Choices*

   Choices allow for greater success for a larger number of students. Choices should be available in the areas of curriculum, assignments, learning environments, and resources.

4. *Adequate Time*

   There must be adequate time to thoroughly master material. Moving students from classroom to classroom in order to cover large amounts of unrelated material results in little learning.

5. *An Enriched Environment*

   There is a connection between intelligence and experience. Classrooms should contain a variety of resources—both material and people—to assist students in seeking patterns and connections. Experiences should be provided in the real world outside the classroom.

A variety of teaching strategies including cooperative learning, physical movement, direct instruction, and visualization should be used, Kovalik says. Questioning strategies that promote higher levels of thinking (through the use of Bloom's Taxonomy) should be employed.

The third area, curriculum development, centers around six steps. First the teacher constructs a year-long theme and divides this theme into monthly components and subtopics. Some themes Kovalik gives as ex-

amples include communication, islands, flight, water, and movement. A fourth-grade teacher in Oregon might, for example, pick the theme "Oregon." Kovalik suggests that the monthly components include the past, the present, the future, art, music, literature, drama, famous people, careers, physical movement, and political action.

Second, the teacher develops key points. That is, he or she develops the common core of knowledge and skills that students should master at the end of the week, the month, or the year. The teacher presents them in a direct instruction format, limiting instruction to eleven to sixteen minutes an hour. The teacher identifies multiple resources from which both teacher and students can work.

Third, the teacher develops inquiries (activities) designed to support and expand on the key points. These inquiries allow the students to internalize, apply, and expand the concepts and skills identified. These inquiries should reflect a variety of learning styles and intelligences (from Gardner's Frames of Mind). They can be developed at different levels of sophistication using Bloom's Taxonomy. Teachers list possible inquiries in the classroom and let students select from the list those that they want to do. Points can be assigned to each inquiry based on its level on Bloom's Taxonomy. The teacher can then establish certain criteria for individual student selection of inquiries; for example, students can select those that reflect a particular level on the taxonomy or that total a certain number of points.

Teaching is the fourth step. And the fifth is to evaluate the work. Kovalik grades student work using the "three C's: *Comprehensive* (Did the student cover the material as thoroughly as possible?); *correct* (Is the response true? Are both sides of an issue covered?); and *complete* (Was the assignment completed as stated? Is it of such quality that it is ready to be turned in?)."

Finally, the teacher does a closure. *Closures* are what Kovalik calls orchestrated reunions of key points. They can take a variety of forms, such as performances, "earn your diploma or treasure hunt nights," or learning station closures. They should occur in the evening and should include all students in significant roles.

Interdisciplinary Approach: Bondi's Designing Interdisciplinary Units

Chapter 1 described the assumptions on which Wiles Bondi bases his interdisciplinary approach and listed five directions an interdisciplinary approach might take in middle schools. Here attention focuses on his planning cycle, which has nine steps as follows:

1. *Select a theme together.* Brainstorm together possible themes. Look for themes that relate to district/school goals and that interest students. Expand or narrow your theme as appropriate to

reflect the teaching situation in which you are involved. Appoint a team leader for the duration of the development of the unit.

2. *Work independently.* Identify topics, objectives and skills from within your subject area that could be developed within this unit.
3. *Meet together to define objectives for the unit.* Share all topics, objectives and skills and combine them into a manageable package.
4. *Meet together to select activities.* Match these activities to your goals in individual subjects. Stretch a little, if need be. Look for activities that provide student options and exploratory activities.
5. *Brainstorm resources.* Consider here both material resources and people resources.
6. *Develop your activities (individually and collectively).* Divide up the responsibility among the team to order, collect and contact.
7. *Schedule your unit.* This includes setting the dates for when to teach it, but also scheduling the use of rooms, speakers, etc.
8. *Advertise your unit.* Do whatever you can to excite student and parent interest in the unit. Advertise in the school newsletter. Put up a "Coming Attraction" bulletin board. Wear slogans on your lapel.
9. *Implement your unit.* Have fun and don't expect everything to be perfect.

Information Processing/Concept Development Approach

The models summarized under this approach focus on the development of concepts in the individual. The first three models—Advance Organizer, Concept Attainment, and Inductive Thinking—include general teaching strategies. Also described is Jean Piaget's research on child development, which other researchers have used as the basis for models for teaching concepts.

The Advance Organizer Model

The research of learning theorist David Ausubel (1963, 1968) focuses on how knowledge (curriculum content) is organized, how the mind works to process new information, and how teachers can present new materials to students using these ideas about curriculum and learning. In developing his theory of meaningful verbal learning, Ausubel states that the single most important factor influencing learning is what the learner already knows. This knowledge, which he labels the student's *cognitive structure*, is made up of both the content of knowledge and the organization of the present knowledge. Learning will be more meaningful to the learner, and the material will

be more easily absorbed and retained by the learner, if it is related to concepts that are stable in his or her cognitive structure.

Ausubel believes that the way in which subject matter is organized and the way in which the mind organizes knowledge (cognitive structure) are parallel. Each of the academic disciplines has a structure of concepts organized hierarchically. These structures of concepts can be taught to students. They become intellectual maps within student's cognitive structures. These maps help them analyze particular domains and solve problems within those domains.

Ausubel's ideas about how subject matter should be organized relate to two principles: progressive differentiation and integrative reconciliation. *Progressive differentiation* means that the most inclusive concepts and principles of a discipline are presented first. *Integrative reconciliation* means that new ideas are constantly reconciled with what the learner already knows.

Ausubel argues for the use of advance organizers to strengthen cognitive structure and enhance retention of new information. An advance organizer is introductory material presented before the lesson that explains, integrates, and interrelates the new material with previously learned material. Advance organizers can be of two types: expository and comparative. Expository organizers provide a model of class relationships, moving from most general to particular subclasses. Comparative organizers are used to integrate new concepts with basically similar concepts already in the learner's cognitive structure and are generally used with more familiar material.

The Advance Organizer Model has three phases: (1) The presentation of the advance organizer, clarifying the aims of the lesson and drawing in the learner's present knowledge; (2) the presentation of the learning task or material, making the organization explicit; and (3) the strengthening of the cognitive organization using the principle of integrative reconciliation. In this model, the teacher is seen as a presenter in a highly structured learning situation. A hierarchical system of knowledge must be developed for use and advance organizers must be identified.

Concept Attainment and Inductive Thinking Models

The Academic Reform Movement developed in the United States following the successful launching of Sputnik I by the Soviet Union in 1957. This movement was led by scholars from the traditional academic disciplines and emphasized the importance of teaching the structure of the discipline and its modes of inquiry. Most secondary curricula were reorganized around sets of core concepts. Programs such as BSSC (Biological Sciences Study Committee) and New Math reflected this shift to the "conceptual approach." From these sources a number of instructional models were developed, including Jerome Bruner's Concept Attainment and Hilda Taba's Inductive Thinking Model.

Bruner and his colleagues, Goodnow and Austin (1977) set out to study *categorizing*—identifying and placing events into classes on the basis

of certain criteria and ignoring others. According to Bruner, categorizing has two components: concept formation and concept attainment. *Concept formation* is the first step toward concept attainment and is developed in Taba's Inductive Thinking Model. It involves grouping examples into different groups, each representing a different concept and labeling those groups. *Concept attainment*, on the other hand, deals with the development of only one concept through exposure to clues supplied by the teacher. Both models rely on Bruner's understanding of what a concept is.

Bruner identifies five elements of a concept: name, examples (positive and negative), attributes (essential and nonessential), attribute values, and rule. The *name* is the term given to a category. *Examples* refer to instances of the concept. The common features of the example are its *attributes*; essential or nonessential attributes reflect *attribute value*. A *rule* is a definition or statement identifying the essential attributes of a concept. That which distinguishes one concept from another involves its combination of attributes.

Three variations or models of Concept Attainment have been developed from Bruner's work. The reception model of Concept Attainment has three phases: presenting data and identifying the concept through teacher presentation of positive and negative examples, testing the attainment of the concept through student identification of unlabeled examples as yes or no, and analyzing the thinking strategy used through a student discussion of thoughts and hypotheses. This model reflects direct instruction under teacher-structured conditions. The other models—the selection model and the unorganized materials model—move to more student control and application.

Taba (1966 and 1967) labels three stages in the inductive thinking process: concept formation, interpretation of data, and application of principles. The first, *concept formation*, involves identifying and listing the data that are relevant to the problem, grouping those items through some basis of similarity, and labeling the groups. This is accomplished by the use of eliciting questions such as "What did you see?", "What belongs together?", and "What would we call these groups?"

Interpretation of data involves interpreting (identifying points), inferring (simply making inferences) and generalizing (going beyond what is given, extrapolating). *Application of principles* involves predicting consequences, explaining and supporting hypotheses, and verifying that prediction.

Within the Inductive Thinking Model, students are actively engaged. Initially the teacher begins by controlling, but as students learn the steps, they assume greater control.

Studies of Cognitive Development

Swiss psychologist Jean Piaget's research on the development of intellectual processes in the child and adolescence has frequently been used

as a basis for models for teaching concepts. In his studies of children, Piaget recognized that human beings develop increasingly more complex levels of thinking in definite stages. Within each stage, children are in possession of certain concepts or cognitive structures, which he labels *schemas*. These schemas organize the world for the child, starting from a very egocentric position to an increasingly altruistic position.

As the child matures he or she acquires experience. She *assimilates* (incorporates) the new experience into her present pattern of behavior. When the present pattern becomes inadequate to explain the new experience, the child develops a new schema to *accommodate* the new experience. A child's intellectual growth occurs, then, as she develops more complex schemas for assimilating the environment. The mechanism by which this occurs is accommodation.

The development of schemas or structures, according to Piaget, occurs in the same order in all of us and at a rate governed by our physiological development. Piaget has classified intellectual development in terms of three stages: sensorimotor stage (0 to 2 years), preoperational stage (2 to 7 years), and operational stage (7 to 16 years). *Development* is then defined as moving from one stage to another and is a function of experience and maturation.

Piaget identified three factors that might affect development. First, teaching is the creation of environments where students' cognitive structures can emerge and change. This occurs when students initiate their own learning experiences. These experiences must allow the student to be actively engaged, and the experiences themselves must be inductive.

Second, Piaget distinguishes among three types of knowledge: physical (learning about the nature of the matter), social (obtained from feedback from other people), and logical (concerned with mathematics and logic). These three types of knowledge demand different types of learning situations.

And third, Piaget maintains that logical and social knowledge are best learned from other children who provide a source of motivation and information that matches each other's cognitive structures. (The recent research on cooperative learning reinforces this point!)

Joyce and Weil (1980) discuss three Piaget-driven models. The first model, developed by Lavatelle (1970) for four-to-seven-year-old children, contains 100 activities divided into three components: (a) classification; (b) number, measurement, and space operations; and (c) seriation operations. Weikart and colleagues (1971), in their program "Project Follow-Through: The Cognitively Oriented Curriculum," emphasizes the core areas of classification (grouping), seriation (ordering), spatial relations, and temporal relations developed first through physical manipulation and then through pictures and words.

The third model, by Kamii and DeVries (1974), identifies knowledge in the general terms of physical knowledge, social knowledge, and logico-mathematical knowledge. Physical knowledge includes information about

everyday objects such as weight, texture, and size and a repertoire of actions, such as folding, cutting, and squeezing. Social knowledge refers to social information, such as norms for social conduct and occupational roles. Logico-mathematical knowledge includes classification, number, space, seriation, and time concepts.

All three models stress the value of unstructured learning experiences, of play, and of the role of thinking. All rely on the ability of the teacher to assess the child's current level of intellectual development. This assessment occurs through the use of Piaget's clinical method. Joyce and Weil believe that the procedures used in the clinical method for assessment are also applicable to the instructional setting. They suggest, then, that the model of teaching would follow three phases. The first phase involves confrontation with stage-relevant tasks; that is, presenting the learner with a puzzling situation matched to his or her developmental level. Phase 2, inquiry, involves eliciting student responses and asking for justifications. During this phase, the teacher offers countersuggestions and probes the student's responses. Phase 3, transfer, involves presenting related tasks and probing student's reasoning, while continuing to offer countersuggestions. For further understanding of the clinical method, refer to Wadsworth (1978) or Ginsburg and Opper (1988).

Combination of Approaches

This final category consists of two models that combine aspects of the other approaches. They are Principles of Integrative Learning and the Laurel Hill Integrative Model.

Kline's Principles of Integrative Learning

Peter Kline (1988) bases his Principles of Integrative Learning primarily on the work of Bulgarian psychotherapist Georgi Lozanov, whose process called "Suggestopedia" has been elaborated in such approaches as Accelerated Learning, Superlearning, and Optimalearning. The learning process has three components: input, synthesis, and output.

Input involves getting the scope of the subject first and then allowing the details to fall into place. Synthesis occurs when the student has an opportunity to compare the new input with previous experience. Output is not limited to one right answer but is an extension of the experience above and beyond that minimally expected.

The three components—input, synthesis, and output—interface with the learning cycle of Lozanov and determine the sequence of instruction. Lozanov's learning cycle consists of three stages: decoding, concert, and activation. These stages are presented sequentially in the classroom. Core concepts are made clear to the learner during the decoding stage. Decoding

may take many forms, including lectures, discussions, charades, and research or participatory activities by students.

Concert sessions involve the presentation of lessons in the form of a story or dialogue with a background of music. He suggests using baroque, classical, or romantic music. Teachers who want to try concerts should listen to a recording of Peter and the Wolf to identify how the speaker orchestrates his or her voice to match the rhythm and mood of the music. Concerts should be used sparingly and cover a large amount of information. Concerts facilitate the mind's ability to synthesize new material and store it in long-term memory.

After concerts are used, material should be activated a day or two later. Activations allow students to show what they have learned in a format that makes sense to them. They can take the form of skits, games, and discussions.

Kline also identifies the following principles that should apply in the classroom:

- maintaining a positive atmosphere in which failures and other shortcomings are never pointed out and in which student self-concept is enhanced
- maintaining an atmosphere in which ambiguity is tolerated
- providing learning experiences for students that reflect their individuality and personal points of view
- encouraging students to explore and enhance their personal learning styles
- providing opportunities for students to engage all seven intelligences as outlined by Gardner
- allowing for the harmonization of one's intellectual, emotional, physical, and spiritual aspects all in one
- encouraging socialization of the student with his or her world
- consistently using a holistic presentation so that all parts of the course are relevant at all times
- allowing for deep structuring of learned concepts by experiencing an idea in many different forms
- understanding, articulating, and generalizing from core ideas

The Laurel Hill Integrative Model

The Laurel Hill Integrative Model was developed by myself, Barbara Shirk, Brooke Belcher, and Kenar Charkoudian. It incorporates the work of Barbara Clark and includes a number of other dimensions. The Laurel Hill Integrative Model has four basic components, each having several facets.

These components are holistic view, integration, collaboration, and site-based management.

1. *Holistic View.* Within the model focus is placed upon learning that involves the whole child. Intellectual, social, physical, and moral development is nurtured. The curriculum is viewed holistically and organized around broad themes.
2. *Integration.* Integration occurs at many levels within the model. It involves (a) the integration of the student's four mind/brain functions in learning as outlined in Clark's seven learning keys, (b) the integration of the curriculum through thematic teaching, (c) the integration of student interests and autonomy, (d) the integration of a variety of teaching strategies and technologies into the program as appropriate, and (e) the integration of the function of generalists and specialists in the delivery of instruction.
3. *Collaboration.* Students, teachers, and parents work collaboratively with one another and within the environment. Cooperation rather than competition is the norm. Caring, mutual respect, and open communication are encouraged. Each student assumes primary responsibility for maintaining one aspect of the program through the assignment of a "caring apprenticeship" (Noddings 1984).
4. *Site-Based Management.* All persons involved in the program participate in the governance of the school. Decisions are made at different levels within the structure of the model. At each level all persons involved have parity; that means they have equal power in decision-making, equal responsibility, and equal ownership. School governance occurs through the establishment of a governing board that includes representatives from all persons involved in the program. The governing board actively involves itself in setting broad goals for the program and in monitoring and evaluating the efforts.

How do these four components affect the day-to-day operation of a school? First, instructional blocks are longer, there is less movement, and there is opportunity for an extended day through an afternoon "lab time" for those students who choose it.

Themes are identified and implemented schoolwide. These themes are selected through the active participation of students, parents, and staff. Instruction will focus on the development of major concepts. Basic skills will be expanded to include thinking skills, physical/sensing skills, and social skills.

Teachers are assigned to the program full-time if at all possible. This means sharing more than one role in some cases. Teachers are also involved in weekly extended, shared planning time and are involved in coaching each other in the use of new strategies, technologies, and materials.

Students are grouped heterogeneously for instruction and work in small cooperative groups in which all share responsibility for learning. Assessment of both the program and student achievement is accomplished through the use of a variety of techniques and strategies including portfolios, videotaping, and individually contracted projects.

Parents assume substantial and varied roles within the program. This will involve training in the Laurel Hill Integrative Model itself.

The Laurel Hill Integrative Model attempts to bring together many aspects of integrative instructional theory and practice into a meaningful whole.

Summary

These models reflect different approaches to integration. The Advance Organizer Model, Concept Attainment Model, and Taba's Inductive Thinking are designed as general teaching strategies to be used in the development of concepts within the individual. The other models are broader in scope and reflect the larger school setting. They encompass not only specific teaching strategies but also the content of the curriculum, the structure of the instructional setting and the school day, and the roles of students and teachers.

These models represent the use of a wide variety of teaching strategies and are designed to accommodate diverse learning styles. The curriculum emphasizes the understanding of major themes and concepts instead of the mastery of content knowledge.

The instructional setting is rich in resources and is designed to be interactive in nature. Students are actively engaged in making choices and pursuing their own interests. Learning experiences are designed to be multisensory and involve the whole child.

The school day contains longer instructional blocks and less movement of students from one class to another. Traditional subject area classes are replaced with integrated block classes in which theme studies can occur.

Generalists and specialists work together in planning and delivering instruction. Students receive instruction in heterogeneous, cooperative work groups and through individualized instruction within the classroom.

The ambience is warm and caring. Teachers, parents, and students share responsibility for the learning process.

Chapter 4

Education 2000: Eugene's Integrated Curriculum

During the 1984-85 school year, the board of education of the Eugene (Oregon) Public Schools commissioned a study of the district's elementary program. This study began in fall 1985 and concluded in summer 1988. The report culminating the study, *Education 2000: Designing Our Future*, contains forty-three key recommendations. In the area of curriculum and instruction, recommendations include:

1. Reduce the detailed, fragmented specific curriculum and replace it with a concepts-based integrated general curriculum.
2. Assign higher priority to global and multicultural concepts, visual and performing arts, higher level thinking skills and interpersonal/intrapersonal skills throughout the curriculum.
3. Integrate new technology and curriculum.
4. Identify and teach to a variety of learning styles.
5. Increase each teacher's repertoire of teaching strategies.
6. Use assessment techniques and instruments other than standardized tests to define success.
7. Use appropriate heterogeneous grouping (age and ability) to reduce stereotyping and tracking.
8. Provide parenting/family education to future parents and parents of young children.

In response to these recommendations the district began the process of restructuring its elementary curriculum.

In winter 1989 each of Eugene's thirty-two elementary school programs identified representatives to serve on the Elementary Curriculum Committee. The task of the committee was to set direction for a smaller writing task force who would then develop the actual curriculum.

The writing task force drew its seventeen members from the Elemen-

tary Curriculum Committee and was expanded to include parents and business persons. In preparation for writing the curriculum, the task force reviewed the priorities set in the Education 2000 report of the Elementary Study Committee; received testimony (particularly from persons with expertise in particular academic disciplines); reviewed current literature on integrated curriculum; and conducted school-level surveys. The task force met regularly throughout the spring and early summer.

The following is a description of the working draft of the *Education 2000 Integrated Curriculum*. The description contains six parts: an overview of how the curriculum is organized by curriculum strands, a description of required skills, a summary of required major themes and concepts and the process used to select them, a definition of the role of questioning within the *Education 2000 Integrated Curriculum* a description of the implementation process, and a brief summary of the characteristics of the curriculum.

Curriculum Strands

In place of the eight traditional disciplines around which the former curriculum was organized, the *Education 2000 Integrated Curriculum* is organized around three curriculum strands, the titles of which are adapted from the *World Core Curriculum* by Robert Muller, former undersecretary general of the United Nations (Reardon 1988). These strands are: (1) The Human Family, (2) Our Planetary Home and Its Place in the Universe, and (3) Understanding and Fulfillment of the Individual. The strands have been defined as follows:

The Human Family

Within this strand, humanity over time is explored, including its universal nature and inherent diversity. This part of the curriculum reflects the richness of cultural heritage and the dignity of all peoples. Students will see themselves as members of an increasingly interdependent, global community, responsible for its future.

The Human Family strand includes some aspects of the traditional content areas of social studies, health education, and the arts.

Our Planetary Home and Its Place in the Universe

Responsibility for understanding, preserving, and managing our planet is explored within this strand. It provides a framework for the content associated with physical, earth, and life sciences and aspects of social studies, health, and art. This content is examined within the context of historical, ethical, and aesthetic perspectives.

Understanding and Fulfillment of the Individual

This strand emphasizes self-awareness through an understanding of

the physical, social, emotional, and creative aspects of each individual. Experiences that integrate these components lead to a sense of self-worth, creative self-expression, and responsible decision-making. Traditional content areas associated with this strand are visual and performing arts, physical education, health, literature, and affective education.

Core Skills

Skills are considered the core of the curriculum and are seen as essential. The traditional view of basic skills as language arts and mathematics is expanded to include thinking skills, physical/sensing skills, and social skills (including interpersonal and intrapersonal skills).

In addition to discrete, specific core skills in each of these areas, several identified processes represent use of skills in combination. Examples include reading, writing, problem solving, critical and creative thinking, performing, and working in cooperative groups. A total of 132 core skills are specified in the *Education 2000 Integrated Curriculum.* Table 2 provides a summary of these skills.

Table 2
Summary of Required Skills
Education 2000 Integrated Curriculum

Required Thinking Skills	*Required Physical/ Sensing Skills*	*Required Social Skills*
Focusing Information Gathering Remembering Comprehending Analyzing Generating Integrating Evaluating	Visual Auditory Tactile Kinesthetic	Social Interaction Skills Social Skills for Classroom/Group Work Social Skills for Self-Awareness

Note: In developing required skills, the task force drew from the work of Marzano and others (1988), Walker (1988), and Johnson and others (1984).

Major Themes and Concepts

The *Education 2000 Integrated Curriculum* takes a thematic approach to integration and includes six major themes: Communities, Change, Power, Interactions, Form, and Systems. Sixty related concepts are clustered under these major themes. Table 3 provides a list of the required major themes and concepts organized by curriculum strands.

In developing major themes and concepts within the *Education 2000 Integrated Curriculum*, these factors were considered:

1. Themes should be significant to study.
2. Themes should not be age or time dependent.
3. Themes should be rooted in and taught through the strands: (1) The Human Family, (2) Our Planetary Home and Its Place in the Universe, and (3) Understanding and Fulfillment of the Individual.
4. Themes should allow for the use of a variety of teaching strategies.
5. Themes should allow for student selected options for study.
6. Themes should allow for the integration of multiple academic disciplines into the area of study.
7. Themes should allow for extensive interplay between skills and concepts.
8. Themes should allow for students to not only grasp existing information but to produce "new" information themselves.
9. Concepts should be clustered around themes in such a way that they facilitate the understanding of the theme and assist in development of instructional units.

See Kaplan (1986).

The following process was used in selecting the major themes and concepts. First, consultants with expertise in each of the traditional academic disciplines made presentations to the writing committee in which they provided overviews of the major concepts and skills within each discipline. After reading current research literature on concept-based programs and exploring educational trends projected for the twenty-first century, the writing task force adapted and expanded the consultants' lists.

Working from these lists, the writers used several strategies to organize the concepts into some meaningful whole. Six significant concepts were selected as organizers for the others. They became the major themes. Other concepts were then clustered and ranked under each of them. They were then displayed as "concept fans" (deBono 1985) to demonstrate how the concepts related to the major themes. Examples of content topics that can be used in unit planning to develop any given theme and/or concept were added. Those concepts required in the *Education 2000 Curriculum* were circled and

Table 3
Required Major Themes and Concepts Clustered by Curriculum Strands

Strand	*Communities*	*Change*	*Power*	*Interactions*	*Form*	*Systems*
The Human Family	Global Community Universality Diversity Environments Cultures Institutions Heritage Rules/Laws Inhabitants Ethnicity	Cycles Adaptation Movements Migration	Authority Force Conflict Influence Use Abuse	Interdependence Competition Cooperation Survival Needs Wants	Aesthetics Historical Perspectives	Natural Systems Families Created Systems Organizational Systems Functional Systems Institutions U.S. Government Symbol Systems
Our Planetary Home and Its Place in the Universe	Ecosystems Environment Inhabitants Balance Intervention Change	Cycles Adaptation	Energy Force	Interdependence Competition Survival Intervention Balance	Matter Energy	Natural Systems Ecosystems Created Systems
Understanding and Fulfillment of the Individual	Participation Roles Citizenship Democratic Ideals Rights Responsibilities	Growth Life Cycle Wellness Dependence/ Independence HIV/Hepatitis B	Conflict Leadership Influence Use	Interdependence Independence	Patterns Aesthetics Elements Media Style	Created Systems Natural Systems Body Systems

highlighted in color. Figure 2 provides an example of the concept fan developed for the major theme "communities."

The Role of Questions in the Curriculum

Questions play an important role in the development of a conceptual-based curriculum. Questioning serves in its traditional role as an important strategy to be used with students to foster thinking and learning. In the *Education 2000 Integrated Curriculum* questions also serve as a planning tool for teachers. Teachers use questions to define major themes and to focus selected unit activities so that they teach to the concept and/or theme intended. Key words are provided within the curriculum guide to assist teachers in developing appropriate questions related to concepts and themes.

Implementation

The *Education 2000 Integrated Curriculum* is in its initial stages of development and implementation. The time line for implementation is five years.

The initial stages of implementation have involved open communication and training of volunteers. Throughout the writing process, elementary staffs have been informed of the progress of the writing committee through published progress reports and informational meetings.

Approximately ninety elementary teachers have been trained in the use of the curriculum and are involved in a pilot of the working draft. At the conclusion of the 1989-90 school year, appropriate revisions will be made.

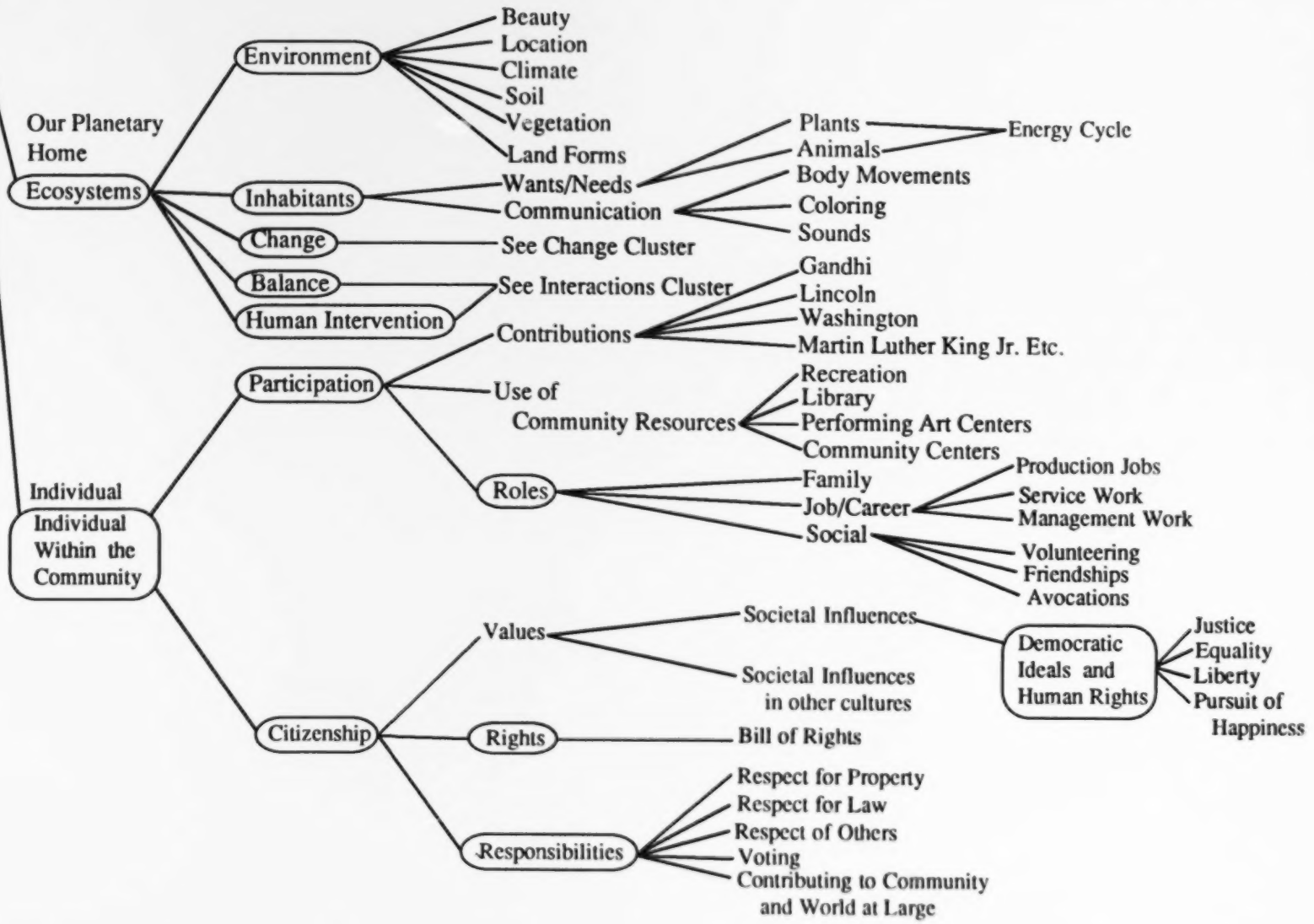
In addition, representatives of each elementary program, including parents, principals, and teachers, have received a three-hour orientation to the curriculum. Members of the writing team are currently involved in responding at the building level to individual and group needs for additional training and assistance. Members have met with both teachers and parent groups.

District-level staff development classes are being offered in the theoretical foundations of integrative education and in curriculum development. Processes are currently being established to facilitate the sharing of thematic instructional units across the district.

Concerns have been raised surrounding the issues of assessment and the availability of adequate planning time. These issues are being explored both at the district level and the building level within the context of the district's site-based decision-making model.

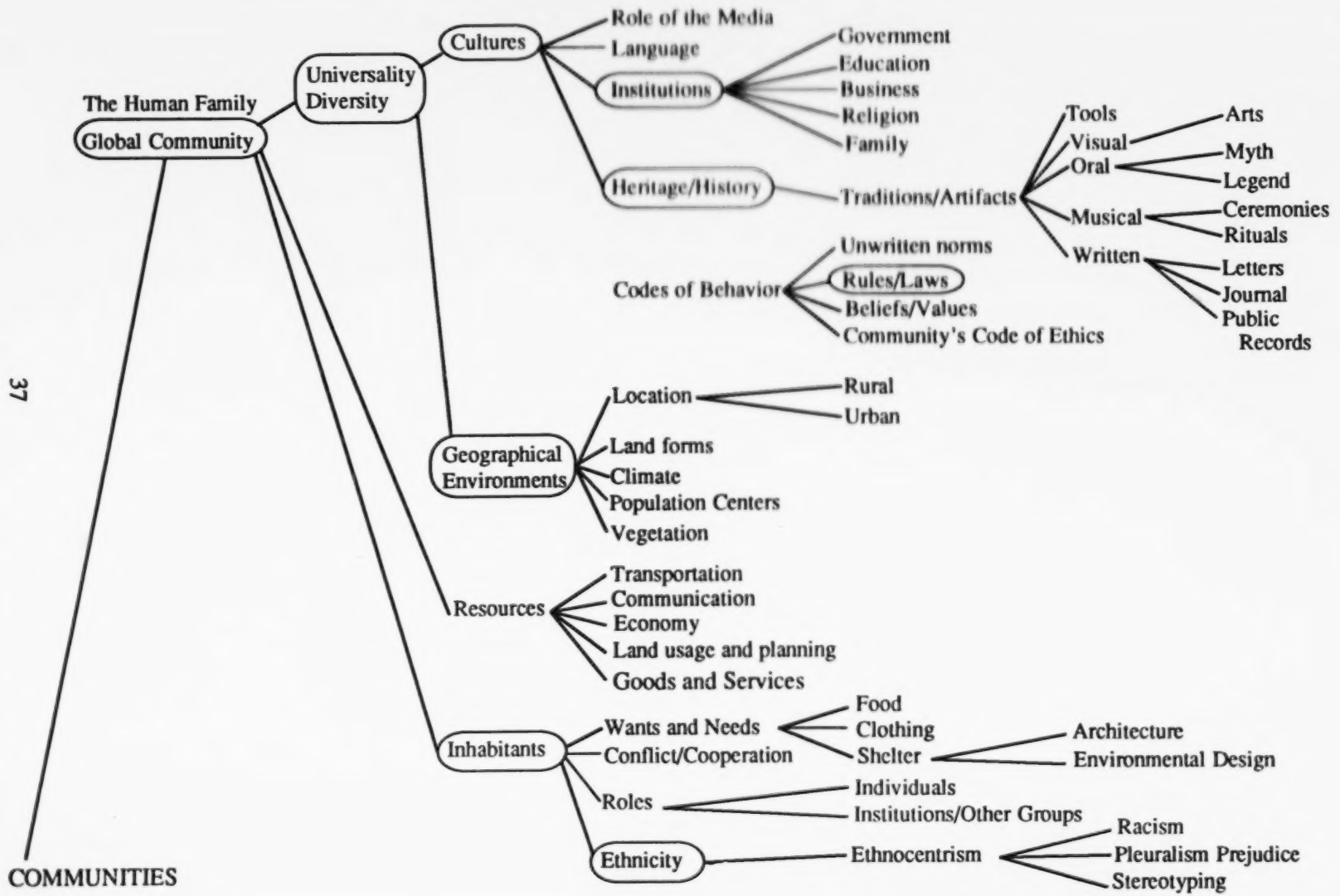
Summary

This chapter has described the *Education 2000 Integrated Curriculum* currently being developed in Eugene Public Schools. The curriculum has a



The assumption is made that cultural comparisons (both within and without the United States) will be made in teaching "Communities."

Figure 2
Communities Concept Fan



number of unique characteristics.

The curriculum uses a thematic approach based on major themes and concepts. Eugene's former elementary curriculum required the mastery of 2,175 separate skills, concepts, and content organized within eight traditional disciplines. The new K-5 *Education 2000 Integrated Curriculum* requires mastery of 6 major themes, 60 concepts, and 132 core skills organized within three curriculum strands. This revision greatly reduces the fragmented nature of the former curriculum and allows for the integration of the curriculum into meaningful wholes.

It expands the traditional understanding of "basic skills" to include thinking, physical, and social skill development. The curriculum allows for extensive interplay between skills and concepts. Skills are developed and used throughout the three curriculum strands.

The *Education 2000 Integrated Curriculum* lends itself to team planning where generalists and specialists work together in designing and delivering instruction. Staffs and individual teachers will select the specific content that is taught within the conceptual framework provided here. This team planning allows for a better match between students and the learning possibilities the curriculum can provide for them.

The developing field of research on the brain and intelligence has dramatically changed our view of learning and human potential. The *Education 2000 Integrated Curriculum* is constructed to reflect this new understanding.

Chapter 5

A Comparison of Traditional and Integrative Approaches

To further understand integrative education, it is helpful to compare and contrast its principles and outcomes with those of current (traditional) programs. Berlak and Berlak (1981) have identified several philosophical, psychological, and social assumptions on which practical issues in schools are based. They identify a total of sixteen issues, of which I have adapted eight to serve as dimensions for comparing traditional and integrative approaches.

Child as Student vs. Whole Child

In traditional education, the child is seen not as a whole person but only in her or his role as a student; current programs generally are discipline-based and emphasize intellectual development. The emphasis of integrative models is to educate the whole child. Intellectual development cannot be isolated from emotional, social, physical, and moral development.

Teacher Control vs. Shared Control

The teacher retains control of both learning and behavioral standards in traditional programs. She or he generally plays a strong directive role in delivering instruction. In integrative models the student, the parents, and the teacher share control and responsibility for the learning environment. Students are encouraged to experiment and try out various strategies and work cooperatively.

Public vs. Personal and Public Knowledge

Little room is allowed for pursuit of personal interests within tradi-

tional subject-based disciplines. Within integrative programs there is an emphasis on both personal and public knowledge. Student-initiated interests and projects are seen as vehicles for teaching valid contents within the public arena.

Knowledge as Content vs. Knowledge as Process

Within many current programs, knowledge is seen as mastery of a prescribed, fixed set of content organized into subjects and textbooks. With the amount of knowledge doubling every fifteen to eighteen months, the curriculum has become overcrowded. Debate centers around what content knowledge should be taught and what content knowledge should be eliminated. Within integrative programs, knowledge is seen as an understanding of the connectedness of "big ideas" and "concepts." Students are encouraged to use a variety of strategies in problem-solving. The process of arriving at solutions is as important as the product.

Extrinsic vs. Intrinsic Motivation

Many current programs rely heavily on extrinsic rewards such as grades and reinforcers. Integrative programs actively involve the learner and focus on student interests and concerns that lead to intrinsic motivation.

Molecular vs. Holistic Teaching and Learning

Learning is broken down into small elements and taught sequentially in traditional programs. Students are viewed as competent when they have mastered the individual pieces of the curriculum. This has led to fragmentation both within the curriculum and the school day. Most integrative programs emphasize holistic teaching and learning, using a variety of teaching strategies and thematic approaches. Instructional blocks are longer and there is less movement from class to class. Learning is seen as occurring in a context where students are able to relate new material to already-existing knowledge. A molecular approach is used occasionally in integrative settings, but instruction consistently moves toward a holistic view.

Shared vs. Unique Characteristics of Children

Current educational programs see students as having many shared characteristics. This is evidenced by the heavy reliance on textbooks where all students are expected to master the same material. Within integrative models children are viewed as having both shared characteristics developmentally and having unique characteristics reflected in particular learning

styles. Heterogeneous grouping is valued.

Differential vs. Equal Allocation of Resources

Both teacher and school resources tend to be allocated unequally in current educational programs. Tracking students within particular ability groups provides learners with different types of teacher attention and access to different skills and knowledge. Organizing knowledge into linear academic disciplines has led to the development of certain authority structures in which certain types of knowledge are accorded greater respect and value than others. Sciences are valued higher than the humanities in secondary schools, and reading and mathematics outrank the arts at the primary level. Corresponding differences in the relative positions of power of teaching positions can also be observed. Moreover, there is great competition between subject areas over the allocation of school resources—both in time and materials. Pie charts with time allocation percentages listed are common.

Integrative models tend to reflect a common curriculum in which tracking and departmentalization are avoided. Generalists and specialists are seen as members of one team collaborating to effectively plan and deliver instruction. (Refer to the work of Basil Bernstein [1971] in *Knowledge and Control* edited by Michael Young, for a more detailed discussion of this significant point.)

In summary, current programs and practices are content driven, are fragmented, reflect centralized control, track children, and involve competition to gain access to resources. Integrative programs and practices are theme-based, are holistic, reflect shared control, and nurture all children in collaborative, interactive environments.

Conclusion

This Bulletin has explored a wide variety of integrative education approaches and models. These models/approaches provide many options for those interested in implementing integrative programs. By way of summary, it is helpful to restate why integrative education models are appropriate for today's schools and the schools of the future.

In the area of curriculum and instruction, integrative programs make possible the restructuring of currently fragmented, overcrowded curricula into meaningful units based on broad areas of study and significant themes. Integrative curricula provide a balance between knowledge-based programs and process-based programs.

The study of the brain and intelligence has dramatically changed our view of human learning and potential. An effort to apply what is known about teaching and learning styles is compatible with integrative models.

On a societal level, integrative education programs represent approaches to instruction that will more adequately prepare citizens for life in the twenty-first century. Within this knowledge-rich society, there will be less production work and more information- and service-related work and work related to international interdependence (Cleveland 1986). These jobs will require the ability to work with others in complex environments and the ability to create and solve problems in new ways. The global society of the twenty-first century will require citizens to be educated with a breadth of knowledge, with new and different skills, and with the ability to access, evaluate, and manage information resources. Alvin Toffler (1980) describes it as an age where things are built by things and people work with ideas.

Because of the very nature of information-age societies, education must be seen more as a life-long process of which formal schooling is only a part. Integrative models educate students to become life-long learners.

Several reformers, including Mortimer Adler's Paideia Group, are calling for strategies to improve education in its broadest sense—to produce an educated electorate who will maintain the viability of our democratic institutions. This education must provide the best education for *all* of our children. Integrative models break down the division of knowledge and power and provide opportunities for a truly egalitarian education for all.

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